

9. Quality Control

The quality control requirements will be consistent with the existing Site-wide QAPP with exception of the addition of the metals analysis completed by XRF methodology USEPA SW-846 6200. The quality control specific to this method can be found in the FSP SOP Attachment B.

10. Performance and System Audits

Performance and systems audits will be consistent with the existing Site-wide QAPP.

11. Preventive Maintenance

The preventive maintenance requirements will be consistent with the existing Site-wide QAPP.

12. Data Assessment Procedures

The data assessment procedures of the existing Site-wide QAPP will be followed; with the exception that complete data set collected for this investigation will undergo data validation.

13. Corrective Actions

Corrective actions are required when field or analytical data are not within the objectives specified in this QAPP Addendum or the Work Plan, such as:

- Equipment is not in proper working order or is not properly calibrated;
- QC requirements have not been met; or
- Issues resulting from performance or systems audits have not been resolved.

Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures for the actions are described below.

13.1 Field Procedures

When conducting the action field work, if a condition is noted by the field crew that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action implemented by the Field Manager or a designee, will be documented on a Corrective Action Form and reported to the appropriate BBL Task Manager, QAC, and Project Manager.

Examples of situations that would require corrective actions are provided below:

- Protocols, as defined by the QAPP (including this QAPP Addendum,), Work Plans, FSP, or FSP Addendum have not been followed;
- Equipment is not in proper working order or is not properly calibrated;
- QC requirements have not been met; or
- Issues resulting from performance or systems audits have not been resolved.

Project personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

13.2 Laboratory Procedures

In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action taken will be documented and reported to the appropriate project manager and QAC.

Corrective action may be initiated, at a minimum, under the following conditions:

- Protocols as defined by this QAPP Addendum have not been followed;
- Predetermined data acceptance standards are not obtained;
- Equipment is not in proper working order or calibrated;
- Sample and test results are not completely traceable;
- QC requirements have not been met; or
- Issues resulting from performance or systems audits have not been resolved.

Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities. Corrective action is initiated when a problem is identified. At whatever level this occurs (i.e., analyst, supervisor, data review, or QC), it will be brought to the attention of the laboratory QAC and, ultimately, the Laboratory Director. Final approval of any action deemed necessary is subject to the approval of the Laboratory Director.

Any corrective action deemed necessary based on system or performance audits, the analytical results of split samples, or the results of data review will be implemented. The corrective action may include sample re-extraction, re-preparation, re-analysis, cleanup, dilutions, matrix modifications, or other activities.

14. QA Report

The QAC will audit the implementation of the QAPP. Each project component will result in some type of QA report or, by its absence, acknowledge that no significant QA or QC deviations occurred. Items that may result in a QA report include:

- Changes or updates to the QAPP/ QAPP Addendum;
- Deviations from QAPP or Work Plan specifications;
- Results of system and performance audits;
- Significant QA/QC problems, recommended solutions, and the results of corrective actions; and
- Limitations on the use of measurement data.

14.1 Field Reports

Reporting the quality of field sample collection and field measurements will be the responsibility of the Field Manager or designee. Information from the field logbooks will be compiled and a summary report on field activity QA will be prepared for the project file.

14.2 Laboratory Reports

The laboratory will maintain QA records related to analyses, QC, and corrective action. This information will be made available to the Project Manager upon request. Routine reporting will include documenting all internal QC checks performed for this project.

15. References

- Blasland, Bouck & Lee, Inc. (BBL). 2005a. *Removal Action Limit Assessment Work Plan*. A plan prepared for the DePue Group by BBL.
- BBL. 2005b. *QAPP Addendum* A plan prepared for the DePue Group by BBL.
- BBL. 2005c. *Field Sampling Plan Addendum, DePue Site, DePue, Illinois*. A plan prepared for the DePue Group by BBL
- Golder Associates, Inc. (Golder). 1999a. *Quality Assurance Project Plan for Remedial Investigation Phase 1 Soil and Groundwater, DePue Site, Illinois*. (Appendix C to DePue Site Remedial Investigation Work Plan Phase 1 Soil and Groundwater.) June 25, 1999.
- Golder. 1999b. *DePue Site Remedial Investigation Phase 1 Soil and Groundwater Field Sampling Plan*. (Appendix A to DePue Site Remedial Investigation Work Plan Phase 1 Soil and Groundwater.) November 23, 1999.
- U.S. Environmental Protection Agency (USEPA). 1980. *Interim Guidance and Specifications for Preparing Quality Assurance Project Plans*. QAMS-005/80. Office of Research and Development. (December 1980).
- USEPA. 1992. *Guide to Management of Investigation-Derived Wastes*. 9345.3-03FS. (January, 1992).
- USEPA. 1996. *Standard Operating Procedure for Elemental Analysis Using the X-MET 920 Field X-Ray Fluorescence Analyzer*. USEPA – New England, Region I, Quality Assurance Unit Staff, Office of Environmental Measurement and Evaluation. October 29, 1996.
- USEPA. 1998. *Field Potable X-Ray Fluorescence Analyzer*. USEPA – Environmental Technology Verification Report. (EPA/600/R-97/150) March 1998.
- USEPA. 1999. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. EPA-540/R-99-008 (October 1999).
- USEPA. 2001. *EPA Requirements for Quality Assurance Project Plans for Environmental Operations*. EPA-QA/R-5. Office of Environmental Information. (March, 2001).
- USEPA. 2002. *Guidance for Quality Assurance Project Plans*. EPA-QA/G-5. Office of Environmental Information. (December, 2002).

Tables

Table 1

New Jersey Zinc/Mobile Chemical Site
DePue, Illinois
Quality Assurance Project Plan Addendum

Sample Quantities and Quality Control Frequencies

Parameter	Estimated # Environmental Sample Quality	Field QC Analyses						Laboratory QC Sample						Total
		Trip Blank		Rinse Blank		Field Duplicate		Matrix Spike		Matrix Spike Duplicate		Lab Duplicate		
		Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	
Soil														
Semivolatile Organic Compounds PAHs (SW-846 8270)	TBD	NA	--	1/day	TBD	1/20	TBD	1/20	TBD	1/20	TBD	NA	--	TBD
Chlorinated Pesticides (SW-846 8081)	TBD	NA	--	1/day	TBD	1/20	TBD	1/20	TBD	1/20	TBD	NA	--	TBD
Metals (SW-846 8010/7000)	TBD	NA	--	1/day	TBD	1/20	TBD	1/20	TBD	NA	--	1/20	TBD	TBD
Metals (SW-846 6200)	TBD	NA	--	1/day	TBD	1/day or 1/20	TBD	1/20	TBD	NA	--	1/20	TBD	TBD
SPLP-Metals (SW-846 1312/6000/7000)	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	NA	TBD	TBD
TCLP-Volatiles (SW-846 1311/8260)	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	NA	--	TBD
TCLP-Semivolatiles (SW-846 1311/8270)	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	NA	--	TBD
TCLP-Pesticides (SW-846 1311/8081)	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	NA	--	TBD
TCLP-Herbicides (SW-846 1311/8151)	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	NA	--	TBD
TCLP-Metals (SW-846 1311/8010, 1311/7000)	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	NA	--	TBD
pH (SW-846 9045)	TBD	NA	--	NA	--	N/A	TBD	NA	--	NA	--	1/20	TBD	TBD

Notes:

1/day One rinse blank per day or one per 20 samples, whichever is more frequent. Rinse blanks not required when dedicated sampling equipment is used.

One precision sample analysis will be performed per day or one per 20 every samples, whichever is more frequent. The relative percent difference acceptance criteria are outlined in Section 7 of the QAPP.

Freq Frequency

NA Not Applicable

No. Number

QC Quality Control

TBD To Be Determined

Table 2
New Jersey Zinc/Mobile Chemical Site
DePue, Illinois
Quality Assurance Project Plan Addendum

Analytical Method, Sample Container, Preservation, and Holding Time Requirements

Parameter	Method	Equipment	Container	Sample Size	Preservation	Holding Time
SOIL SAMPLES						
Semivolatile Organic Compounds (PAHs)	SW-846 Method 8270C	3550-Sonication or 3540-Sonhet	-	1-8oz glass jar with Teflon®-lined lid	100 grams	Cool to 4°C
Chlorinated Pesticides	SW-846 Method 8081	3550-Sonication or 3540-Sonhet	-	1-8oz glass jar with Teflon®-lined lid	100 grams	Cool to 4°C
Metals - except mercury	SW-846 Method 6010B/7000A	3050B or 3051	-	1-4oz wide mouth glass jar with Teflon®-lined lid	10 grams	Cool to 4°C
Mercury	SW-846 Method 7471A	-	-		10 grams	Cool to 4°C
pH	SW-846 Method 8045C	-	-		20 grams	Cool to 4°C
TCLP Semivolatile Organic Compounds	SW-846 Method 8270C	TCLP method 1311 followed by 3510C-Sep Funnel or 3520C-Continuous	-	1-8oz glass jar with Teflon®-lined lid	100 grams	Cool to 4°C
TCLP Chlorinated Pesticides	SW-846 Method 8270C	TCLP method 1311 followed by 3510C-Sep Funnel or 3520C-Continuous	-	1-8oz glass jar with Teflon®-lined lid	100 grams	Cool to 4°C
Metals - except mercury	SW-846 Method 6010B/7000A	TCLP method 1311 followed by 3005A or 3015 Acid Digestion	-	1-4oz wide mouth glass jar with Teflon®-lined lid	10 grams	Cool to 4°C
Mercury	SW-846 Method 7471A	-	-		10 grams	Cool to 4°C

Notes:

1. Holding time measured from date of collection, unless noted.

References:

USEPA (January 1996) Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Rev. 3.

Table 3

New Jersey Zinc/Mobile Chemical Site
DePue, Illinois
Quality Assurance Project Plan Addendum

Electronic Data Deliverable (EDD) Format

Field Name	Maximum Length	Data Type	Comments
FIELD SAMPLE ID	50	TEXT	From the chain of custody. Add "RE" or "DL" to differentiate reanalyses and dilutions.
SDG	50	TEXT	
LAB SAMPLE ID	50	TEXT	
MATRIX	10	TEXT	SOIL, WATER, SEDIMENT, etc.
SAMPLE TYPE	10	TEXT	FB, RB, TB, FD, FS for Field Blank, Rinse Blank, Trip Blank, Field Duplicate and Field Sample, respectively. DEFAULT TO FS
DATE COLLECTED	--	DATE/TIME	MM/DD/YY
TIME COLLECTED*	--	DATE/TIME	Military time
DEPTH START	--	NUMBER	
DEPTH END	--	NUMBER	
DEPTH UNITS	25	TEXT	FEET, INCHES, METERS, etc.
ANALYTICAL METHOD	50	TEXT	
CAS NUMBER	25	TEXT	
ANALYTE	100	TEXT	
RESULT VALUE	--	NUMBER	For non-detected results, enter Reporting Limit ("U" must be present in Lab Qualifier field).
LAB QUALIFIER	10	TEXT	"U" for non-detected, others as defined by laboratory.
REPORTING LIMIT	--	NUMBER	
RESULT UNIT	25	TEXT	
DILUTION FACTOR	--	NUMBER	
REPORTABLE RESULT	--	YES/NO	DEFAULT TO YES
FILTERED?	--	YES/NO	
DATE ANALYZED	--	DATE/TIME	MM/DD/YY
TIME ANALYZED*	--	DATE/TIME	Military time
DATE EXTRACTED*	--	DATE/TIME	MM/DD/YY
LABORATORY NAME*	50	TEXT	

Notes:

- 1 This definition is for an "Excel-type" spreadsheet. Fields flagged with an "*" are optional and may be left blank if not available electronically from the laboratory.
- 2 Depth-related fields may be left blank for samples and matrices for which they are not applicable.

Table 4

**New Jersey Zinc/Mobile Chemical Site
DePue, Illinois
Quality Assurance Project Plan Addendum**

XRF Detection Limit Comparison to Removal Action Levels (RALs)

Constituent	Range	On-site Detection Limit (mg/kg)	Removal Action Level (RAL)	TACO Background Value
TAL Metals (mg/kg)				
Aluminum	—	156000	780000	9,200
Antimony	—	62	310	3
Arsenic	7 - 13	8.6	43	11
Barium	75 - 100	11000	55000	122
Beryllium	—	3	15	1
Cadmium	40 - 50	78	390	1
Calcium	—	NA	NA	5,525
Chromium	25 - 45	780 (156,000)	3,900 (780,000)	13
Cobalt	65 - 200	9400	47000	9
Copper	43 - 50	6200	31000	12
Iron	100	46000	230000	15,000
Lead	13 - 16	240	1200	21
Magnesium	—	NA	NA	2,700
Manganese	28 - 80	3600	18000	630
Mercury	11 - 14	15.6	78	0
Nickel	45 - 70	3200	16000	13
Potassium	—	NA	NA	1,100
Selenium	8 - 9	780	3900	0
Silver	40 - 45	780	3900	1
Sodium	—	NA	NA	130
Thallium	—	NA	NA	0
Vanadium	—	1100	5500	25
Zinc	20 - 30	46000	230000	60

Notes:

- (1) Approximate detection limits are based on conversations with Innov-X Systems technical staff.
 - (2) Source for Removal Action Levels (RALs): Hazard Evaluation Handbook: A Guide to Removal Actions. October 1997. Fourth Edition. EPA 903/B-97-006.
 3. Source: Part 742, Tiered Approach to Corrective Action Objectives (TACO) (Illinois Pollution Control Board, 1997), Appendix A, Table G: Concentrations of Inorganic Chemicals in Background Soils, Counties Outside Metropolitan Statistical Areas.
- NA = Not available.
— = Not applicable.

Attachments

Attachment A

Chain of Custody

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CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ____ of ____

Lab Work Order #

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Appendix B

Example Chain-of-Custody Form



Shealy Environmental Services, Inc.
106 Vantage Point Drive
West Columbia, South Carolina 29172
Telephone No. (803) 791-9700 Fax No. (803) 791-9111
www.shealylab.com

Number

[illegible]